PATENT
Attorney Docket No. 401022

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

KANEKO et al.

Art Unit: Unknown

Application No.: Unknown

Examiner: Unknown

Filed: January 19, 2001

For: NAVIGATION APPARATUS AND RECORDING MEDIUM PROVIDING COMMUNICATION BETWEEN APPLICATIONS

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Prior to the examination of the above-identified patent application, please enter the following amendments and consider the following remarks.

IN THE SPECIFICATION:

Replace the paragraph beginning at page 1, line 16 with:

The present invention generally relates to navigation apparatus and recording medium for providing navigation services, such as current position computation, route search and route guidance and, more particularly, to a navigation apparatus and a recording medium in which communication between applications is provided.

Replace the paragraph beginning at page 1, line 16 with:

A navigation apparatus currently in use is usually provided with functions of, for example, displaying current position and showing a route to a destination for a driver. Various types of navigation provided with extended functions in addition to the basic

navigation services are also being developed. Apparatus with such extended functions are expected to find applications in the intelligent transport system (ITS). The extended functions for the delivery and collection business operations include display of information related to collection and delivery of goods received from a distribution center and information related to facilities at a delivery destination. The extended functions for the general consumer market include display of information related to facilities such as restaurants at destinations.

Replace the paragraph beginning at page 4, line 15 with:

The hierarchy further comprises: a Java virtual machine 44 that operates on the navigation OS 42; and a distribution application module 545 that provides various services required in the collection and delivery operation (hereinafter, such services will be referred to as collection and delivery information services). The distribution application module 545 is a JAVA application and operates on the JAVA virtual machine 44. A navigation application module 546 provides navigation services by executing computation of current position, computation of a route, guidance of a route, display of a map and the like, based on information from the navigation hardware 41. The navigation application module 546 is developed in a program language such as C or C++ and implemented in the navigation apparatus in the form of native codes.

Replace the paragraph beginning at page 6, line 11 with:

As shown in Fig. 22, the vehicle operation instruction may include vehicle information; order of delivery and locations of delivery destination; and operations required at the destination. The vehicle information may include information related to vehicle identification, a driver and the like. The order of delivery and locations of delivery may be specified as a list of store codes, store names and store locations (addresses) arranged in the order of delivery. The list also includes time of delivery and indication of whether there is a request for a time of delivery. The operations required at the destination may be specified as a list of names of delivered goods and the quantity thereof at each of the delivery destinations.

Replace the paragraph beginning at page 7, line 29 with:

When the "delivery schedule" item 622 is selected by the user, the distribution application module 545 responds to the selection by selectively reading the vehicle operation instruction stored in the RAM 3. More specifically, the distribution application module 545 reads out the order of delivery, the names of the stores at the respective destinations, the requested time of delivery and indication of whether a time of delivery is requested, for all destinations. The distribution application module 545 controls the graphic control circuit 6 via the Java virtual machine 44, the navigation OS and the device driver 4 so as to display the information thus read out on the display 8.

Replace the paragraph beginning at page 12, line 20 with:

A navigation apparatus for vehicle information and communication system (VICS) is capable of receiving information on traffic jams and traffic accidents so that route guidance based on such information is available. The capability to compute the time required before arriving at a destination is also provided. The user wanting to determine whether a delivery of goods can be completed before the requested time of delivery has to learn the requested time of delivery using the collection and delivery information service, and learn the required period of time to arrive at the destination using the navigation service. The user has to make a determination for each destination, based on the current time and the required period of time. Thereby, a heavy burden is placed on the user.

IN THE CLAIMS:

Replace the indicated claims with:

1. (Amended) A navigation apparatus providing navigation services comprising:

a platform block including hardware of the navigation apparatus and basic functions for controlling the hardware;

a navigation application processing block for providing navigation services using the basic functions included in said platform block; and

an optional application processing block for providing optional services using any of the navigation services based on information acquired using the basic functions of said platform block, by communicating with said navigation application processing block.

3. (Amended) The navigation apparatus according to claim 1, wherein

said optional application processing block is a Java application executed on a Java virtual machine, and

said navigation application processing block communicates with said optional application processing block in accordance with a Java native interface.

5. (Amended) A computable readable recording medium storing programs for controlling a computer to operate as a navigation apparatus providing navigation services, the programs directing a computer to operate as:

a platform block including basic functions for controlling hardware of the navigation apparatus;

a navigation application processing block for providing navigation services using the basic functions of said platform block; and

an optional application processing block for providing optional services using any of the navigation services based on information acquired using the basic functions included in said platform block by communicating with said navigation application processing block.

6. (Amended) A navigation apparatus for providing navigation services comprising:

a platform block including hardware of the navigation apparatus and basic functions for controlling the hardware;

a navigation application processing block for providing navigation services using the basic functions included in said platform block;

an optional application processing block for providing optional services using any of the navigation services based on information acquired using the basic functions of said platform block; and

an interface processing block for communicating with said optional application processing block and said navigation application processing block to enable any of the optional services to be executed.

7. (Amended) The navigation apparatus according to claim 6, wherein said optional application processing block is executed on a virtual platform and is independent of said platform block.

10. (Amended) The navigation apparatus according to claim 9, wherein said interface application block includes one of a method for exchanging data with said optional application processing block and a variable member in which said optional application processing block reads and writes data, and a method for exchanging data with said navigation application processing block and a variable member in which said navigation application processing block reads and writes data.

11. (Amended) The navigation apparatus according to claim 6, wherein said navigation application processing block executes any of the navigation services in accordance with navigation control data supplied from said optional application processing block via said interface processing block and supplies navigation information data including one of an interim result and an execution result to said optional application processing block via said interface processing block.

12. (Amended) The navigation apparatus according to claim 11, wherein said interface processing block generates, when the navigation control data from said optional application processing block is composite navigation control data, plural navigation control data sets from the composite navigation control data and supplies the plural navigation control data sets to said navigation application processing block.

13. (Amended) The navigation apparatus according to claim 6, wherein said interface processing block communicates with said optional application processing block using one of socket communication and Java RMI.

17. (Amended) The navigation apparatus according to claim 15, wherein said interface processing block displays a menu of remote optional application processing

blocks using the basic functions included in said platform block, adds to the menu the remote optional application processing block when the remote optional application processing block is acquired from the external source and starts the acquired remote optional application processing block when selected through the menu.

18. (Amended) The navigation apparatus according to claim 6, wherein

said optional application processing block supplies a request for required communication services to said interface processing block, and

said interface processing block starts the communication services requested upon receipt of the request.

19. (Amended) The navigation apparatus according to claim 18, wherein said interface processing block acquires a module for executing the communication services requested corresponding to the request when the module is not available.

20. (Amended) The navigation apparatus according to claim 6, wherein said optional application processing block provides collection and delivery information services using any of the navigation services, based on information acquired from a center using the basic functions included in said platform block.

REMARKS

The foregoing Amendment improves the form of the application without adding new matter.

Respectfully submitted,

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SPECIFICATION, CLAIMS AND ABSTRACT AS PRELIMINARILY AMENDED

Amendments to the paragraph beginning at page 1, line 7:

The present invention generally relates to navigation ~~apparatuses~~ apparatus and recording ~~mediums~~ medium for providing navigation services, such as current position computation, route search and route guidance and, more particularly, to a navigation apparatus and a recording medium in which communication between applications is provided.

Amendments to the paragraph beginning at page 1, line 16:

A navigation apparatus currently in use is usually provided with functions of, for example, displaying ~~a~~ current position and showing a route to a destination for a driver. Various types of navigation ~~apparatuses~~ provided with extended functions in addition to the basic navigation services are also being developed. ~~Apparatuses~~ Apparatus with such extended functions are expected to find applications in the intelligent transport system (ITS). The extended functions ~~adapted~~ for the delivery and collection business ~~operation~~ operations include display of information related to collection and delivery of goods ~~and~~

received from a distribution center and information related to facilities at a delivery destination. The extended functions ~~adapted~~ for the general consumer market include display of information related to facilities such as restaurants at destinations.

Amendments to the paragraph beginning at page 4, line 15:

The hierarchy further comprises: a Java virtual machine 44 that operates on the navigation OS 42; and a distribution application module 545 that provides various services required in the collection and delivery operation (hereinafter, such services will be referred to as collection and delivery information services). The distribution application module 545 is a JAVA application and operates on the JAVA virtual machine 44. A navigation application module 546 provides navigation services by executing computation of ~~a~~ current position, computation of a route, guidance of a route, display of a map and the like, based on information from the navigation hardware 41. The navigation application module 546 is developed in a program language such as C or C++ and implemented in the navigation apparatus in the form of native codes.

Amendments to the paragraph beginning at page 6, line 11:

As shown in Fig. 22, the vehicle operation instruction may include vehicle information; order ~~or~~ of delivery and locations of delivery destination; and operations required at the destination. The vehicle information may include information related to vehicle identification, a driver and the like. The order of delivery and locations of delivery may be specified as a list of store codes, store names and store locations (addresses) arranged in the order of delivery. The list also includes time of delivery and indication of whether there is a request for a time of delivery. The operations required at the destination may be specified as a list of names of delivered goods and the quantity thereof at each of the delivery destinations.

Amendments to the paragraph beginning at page 7, line 29:

When the "delivery schedule" item 622 is selected by the user, the distribution application module 545 responds to the selection by selectively reading the vehicle operation instruction stored in the RAM 3. More specifically, the distribution application

module 545 reads out the order of delivery, the names of the stores at the respective destinations, the requested time of delivery and indication of whether a time of delivery is requested, for all destinations. The distribution application module 545 controls the graphic control circuit 6 via the Java virtual machine 44, the navigation OS ~~ad~~ and the device driver 4 so as to display the information thus read out on the display 8.

Amendments to the paragraph beginning at page 12, line 20:

A navigation apparatus ~~adapted~~ for vehicle information and communication system (VICS) is capable of receiving information on traffic jams and traffic accidents so that route guidance based on such information is available. The capability to compute the time required before arriving at a destination is also provided. The user wanting to determine whether a delivery of goods can be completed before the requested time of delivery has to learn the requested time of delivery using the collection and delivery information service, and learn the required period of time to arrive at the destination using the navigation service. The user has to make a determination for each destination, based on the current time and the required period of time. Thereby, a heavy ~~load~~ burden is placed on the user.

Amendments to existing claims:

1. (Amended) A navigation apparatus ~~for~~ providing navigation services~~,~~ comprising:

a platform block ~~provided with~~ including hardware of the navigation apparatus and basic functions for controlling the hardware;

a navigation application processing block for providing navigation services using the basic functions ~~provided~~ included in said platform block; and

an optional application processing block for providing optional services using any of the navigation services based on information acquired using the basic functions of said platform block, by communicating with said navigation application processing block.

3. (Amended) The navigation apparatus according to claim 1, wherein

said optional application processing block is a Java application executed on a Java virtual machine, and

said navigation application processing block communicates with said optional application processing block in accordance with a Java native interface.

5. (Amended) A computable readable recording medium storing programs for controlling a computer to operate as a navigation apparatus providing navigation services, the programs ~~allowing~~ directing a computer to operate as:

a platform block ~~provided with~~ including basic functions for controlling hardware of the navigation apparatus;

a navigation application processing block for providing navigation services using the basic functions of ~~the~~ said platform block; and

an optional application processing block for providing optional services using any of the navigation services based on information acquired using the basic functions ~~of~~ included in said platform block~~,~~ by communicating with said navigation application processing block.

6. (Amended) A navigation apparatus for providing navigation services~~,~~ comprising:

a platform block ~~provided with~~ including hardware of the navigation apparatus and basic functions for controlling the hardware;

a navigation application processing block for providing navigation services using the basic functions ~~provided~~ included in said platform block;

an optional application processing block for providing optional services using any of the navigation services based on information acquired using the basic functions of said platform block; and

an interface processing block for communicating with said optional application processing block and said navigation application processing block ~~so as~~ to enable any of the optional services to be executed.

7. (Amended) The navigation apparatus according to claim 6, wherein said optional application processing block is executed on a virtual platform and is independent of said platform block.

10. (Amended) The navigation apparatus according to claim 9, wherein said interface application block ~~is provided with~~ includes one of a method for exchanging data with said optional application processing block and a ~~member~~ variable member in which said optional application processing block reads and writes data, and ~~one of~~ a method for exchanging data with said navigation application processing block and a ~~member~~ variable member in which said navigation application processing block reads and writes data.

11. (Amended) The navigation apparatus according to claim 6, wherein said navigation application processing block executes any of the navigation services in accordance with navigation control data supplied from said optional application processing block via said interface processing block and supplies navigation information data including one of an interim result ~~or~~ and an execution result to said optional application processing block via said interface processing block.

12. (Amended) The navigation apparatus according to claim 11, wherein said interface processing block generates, when ~~it is determined that~~ the navigation control data from said optional application processing block is composite navigation control data, plural navigation control data sets from the composite navigation control data and supplies the plural navigation control data sets to said navigation application processing block.

13. (Amended) The navigation apparatus according to claim 6, wherein said interface processing block communicates with said optional application processing block using one of socket communication ~~or~~ and Java RMI.

17. (Amended) The navigation apparatus according to claim 15, wherein said interface processing block displays a menu of remote optional application processing blocks using the basic functions ~~of~~ included in said platform block, adds to the menu the remote optional application processing block when the remote optional application processing block is acquired from the external source and starts the acquired remote optional application processing block when selected ~~from~~ through the menu.

18. (Amended) The navigation apparatus according to claim 6, wherein

said optional application processing block supplies a request for required communication services to said interface processing block, and

said interface processing block ~~dynamically~~ starts the ~~requested~~ communication services requested upon receipt of the request.

19. (Amended) The navigation apparatus according to claim 18, wherein said interface processing block acquires a module for executing the ~~requested~~ communication services requested corresponding to the request when the module is not available.

20. (Amended) The navigation apparatus according to claim 6, wherein said optional application processing block provides collection and delivery information services using any of the navigation services, based on information acquired from a ~~predetermined~~ center using the basic functions ~~of~~ included in said platform block.

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For: NAVIGATION APPARATUS AND RECORDING MEDIUM PROVIDING COMMUNICATION BETWEEN APPLICATIONS

CLAIMS PENDING AFTER PRELIMINARY AMENDMENT

1. A navigation apparatus providing navigation services comprising:

a platform block including hardware of the navigation apparatus and basic functions for controlling the hardware;

a navigation application processing block for providing navigation services using the basic functions included in said platform block; and

an optional application processing block for providing optional services using any of the navigation services based on information acquired using the basic functions of said platform block, by communicating with said navigation application processing block.

2. The navigation apparatus according to claim 1, wherein said optional application processing block is an application executed on a virtual platform and is independent of said platform block.

3. The navigation apparatus according to claim 1, wherein

said optional application processing block is a Java application executed on a Java virtual machine, and

said navigation application processing block communicates with said optional application processing block in accordance with a Java native interface.

4. The navigation apparatus according to claim 1, wherein said navigation application processing block communicates with said optional application processing block using socket communication.

5. A computable readable recording medium storing programs for controlling a computer to operate as a navigation apparatus providing navigation services, the programs directing a computer to operate as:

a platform block including basic functions for controlling hardware of the navigation apparatus;

a navigation application processing block for providing navigation services using the basic functions of said platform block; and

an optional application processing block for providing optional services using any of the navigation services based on information acquired using the basic functions included in said platform block by communicating with said navigation application processing block.

6. A navigation apparatus for providing navigation services comprising:

a platform block including hardware of the navigation apparatus and basic functions for controlling the hardware;

a navigation application processing block for providing navigation services using the basic functions included in said platform block;

an optional application processing block for providing optional services using any of the navigation services based on information acquired using the basic functions of said platform block; and

an interface processing block for communicating with said optional application processing block and said navigation application processing block to enable any of the optional services to be executed.

7. The navigation apparatus according to claim 6, wherein said optional application processing block is executed on a virtual platform and is independent of said platform block.

8. The navigation apparatus according to claim 6, wherein said optional application processing block is a Java application executed on a Java virtual machine.

9. The navigation apparatus according to claim 6, wherein said interface application block is a Java application executed on a Java virtual machine.

10. The navigation apparatus according to claim 9, wherein said interface application block includes one of a method for exchanging data with said optional application processing block and a variable member in which said optional application processing block reads and writes data, and a method for exchanging data with said navigation application processing block and a variable member in which said navigation application processing block reads and writes data.

11. The navigation apparatus according to claim 6, wherein said navigation application processing block executes any of the navigation services in accordance with navigation control data supplied from said optional application processing block via said interface processing block and supplies navigation information data including one of an interim result and an execution result to said optional application processing block via said interface processing block.

12. The navigation apparatus according to claim 11, wherein said interface processing block generates, when the navigation control data from said optional application processing block is composite navigation control data, plural navigation control data sets from the composite navigation control data and supplies the plural navigation control data sets to said navigation application processing block.

13. The navigation apparatus according to claim 6, wherein said interface processing block communicates with said optional application processing block using one of socket communication and Java RMI.

14. The navigation apparatus according to claim 6, wherein said interface processing block communicates with said navigation application processing block using socket communication.

15. The navigation apparatus according to claim 6, wherein said interface processing block acquires a remote optional application processing block from an external source using the basic functions of said platform block.

16. The navigation apparatus according to claim 15, wherein said interface processing block acquires the remote optional application processing block from the external source only when a communication service used by the remote optional application processing block is available for use.

17. The navigation apparatus according to claim 15, wherein said interface processing block displays a menu of remote optional application processing blocks using the basic functions included in said platform block, adds to the menu the remote optional application processing block when the remote optional application processing block is acquired from the external source and starts the acquired remote optional application processing block when selected through the menu.

18. The navigation apparatus according to claim 6, wherein

said optional application processing block supplies a request for required communication services to said interface processing block, and

said interface processing block starts the communication services requested upon receipt of the request.

19. The navigation apparatus according to claim 18, wherein said interface processing block acquires a module for executing the communication services requested corresponding to the request when the module is not available.

20. The navigation apparatus according to claim 6, wherein said optional application processing block provides collection and delivery information services using any of the navigation services, based on information acquired from a center using the basic functions included in said platform block.